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(56) Documents Cited

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(54) Abstract Title

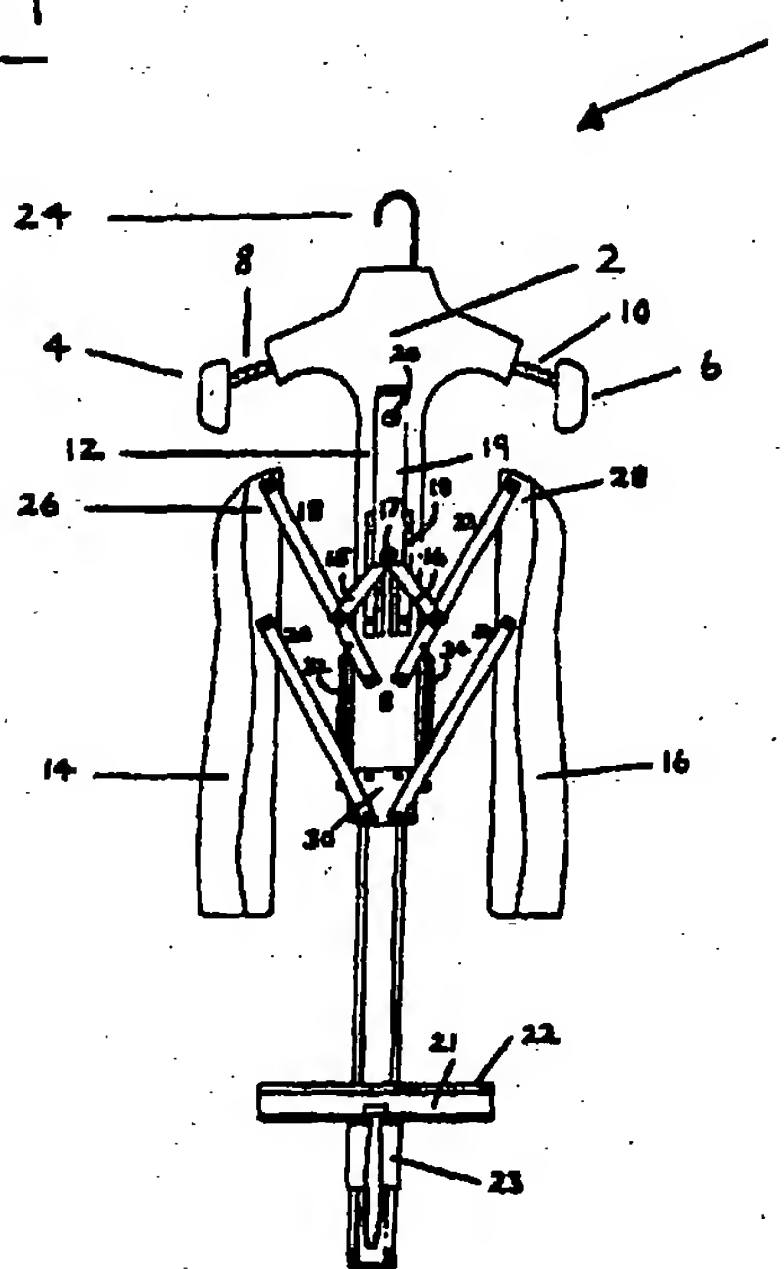
Garment drying method and apparatus

(57) The present invention aims to improve the drying of garments and cutting down the "finishing" time substantially.

Accordingly, the present invention provides apparatus for drying a garment, the apparatus including: a static dryer including a cabinet into which in use hot air and/or steam is feedable to accelerate the drying and/or finishing process, and means (1) for holding shaping and/or stretching the garment on which the garment is arrangeable to maintain the proper shape of the garment whilst it is being dried inside the cabinet.

By using the means 1 for holding and shaping the garment, garment shrinkage due to fabric relaxation during the drying process is reduced or prevented and the duration of any finishing process required is reduced substantially.

Fig 1



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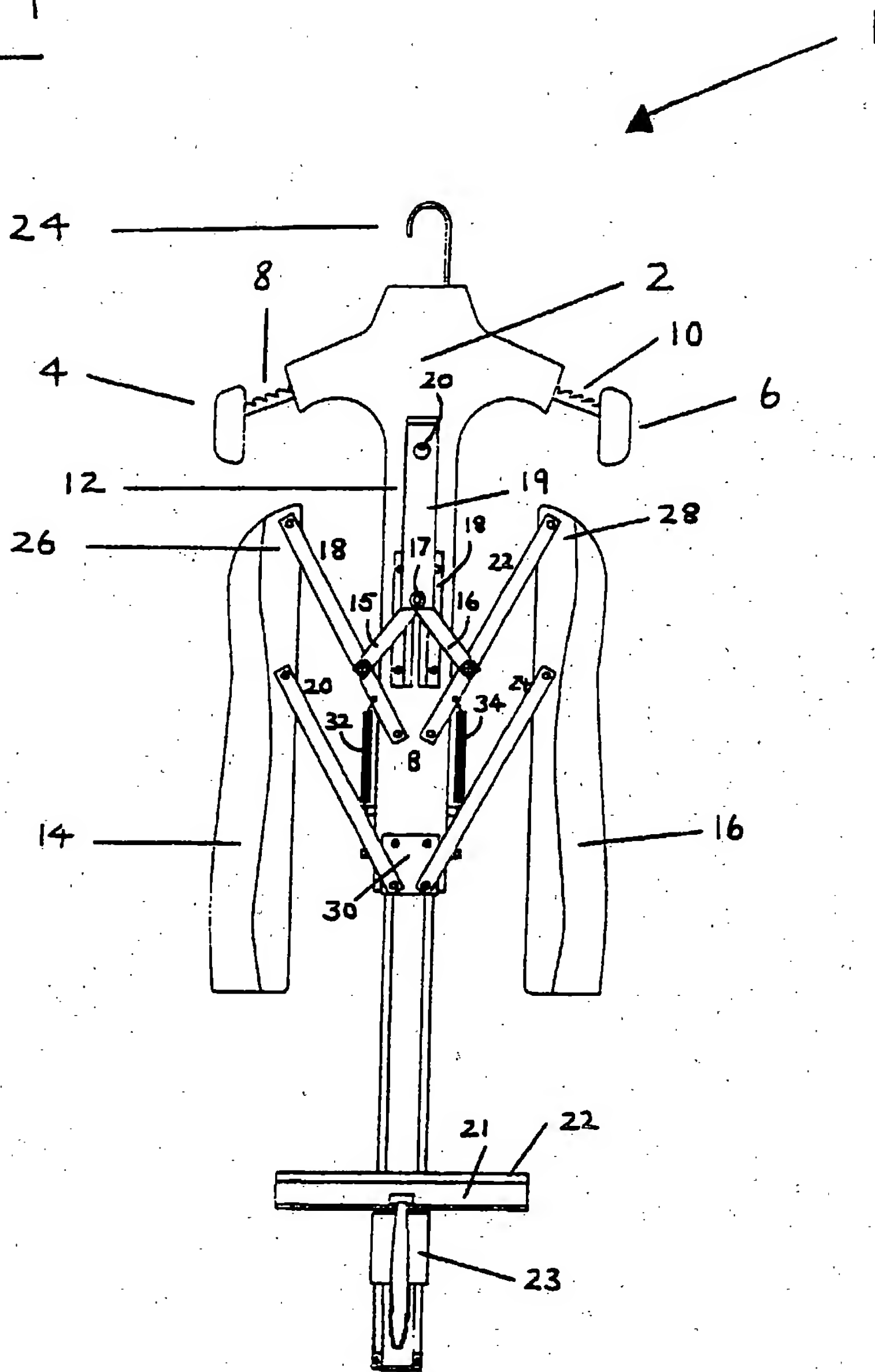
Fig 1

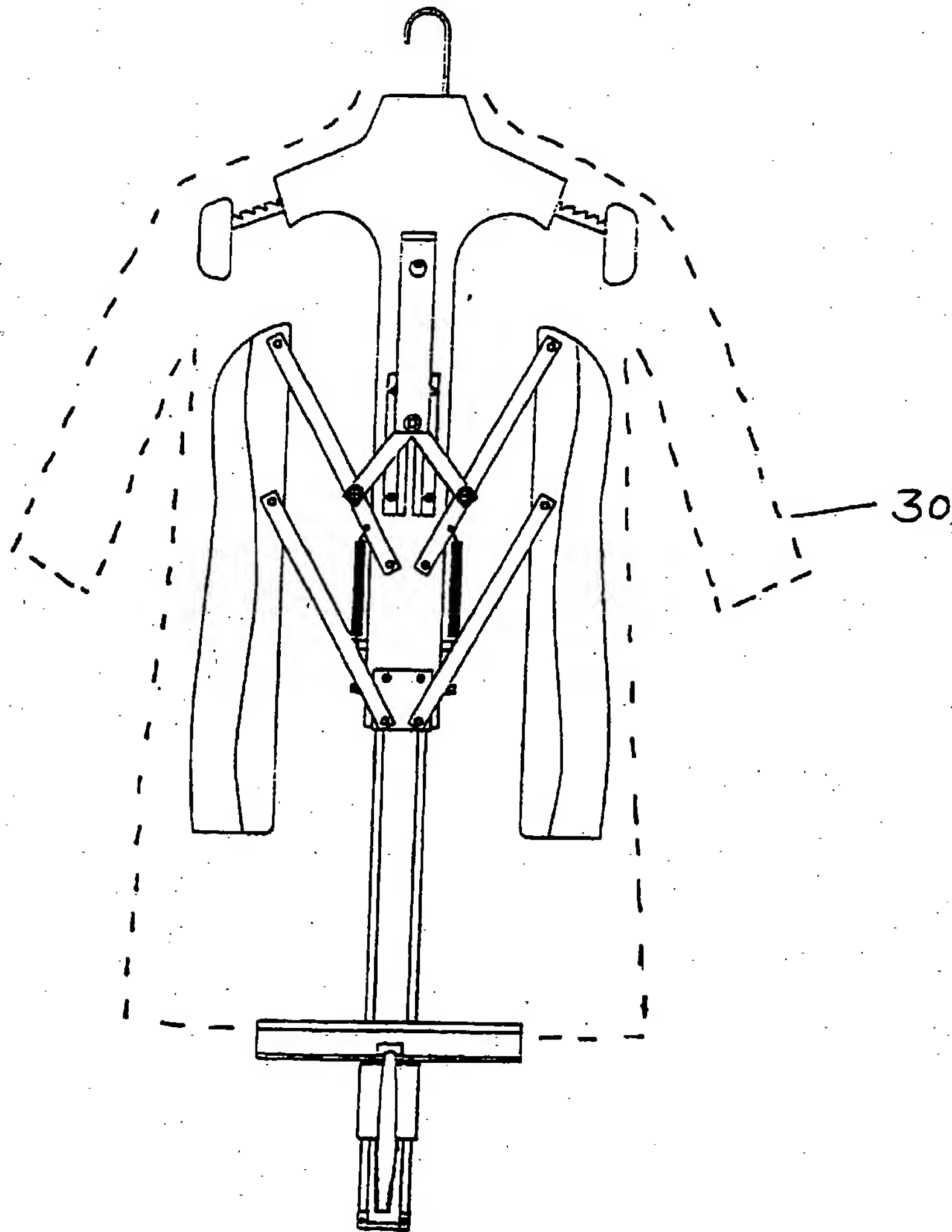
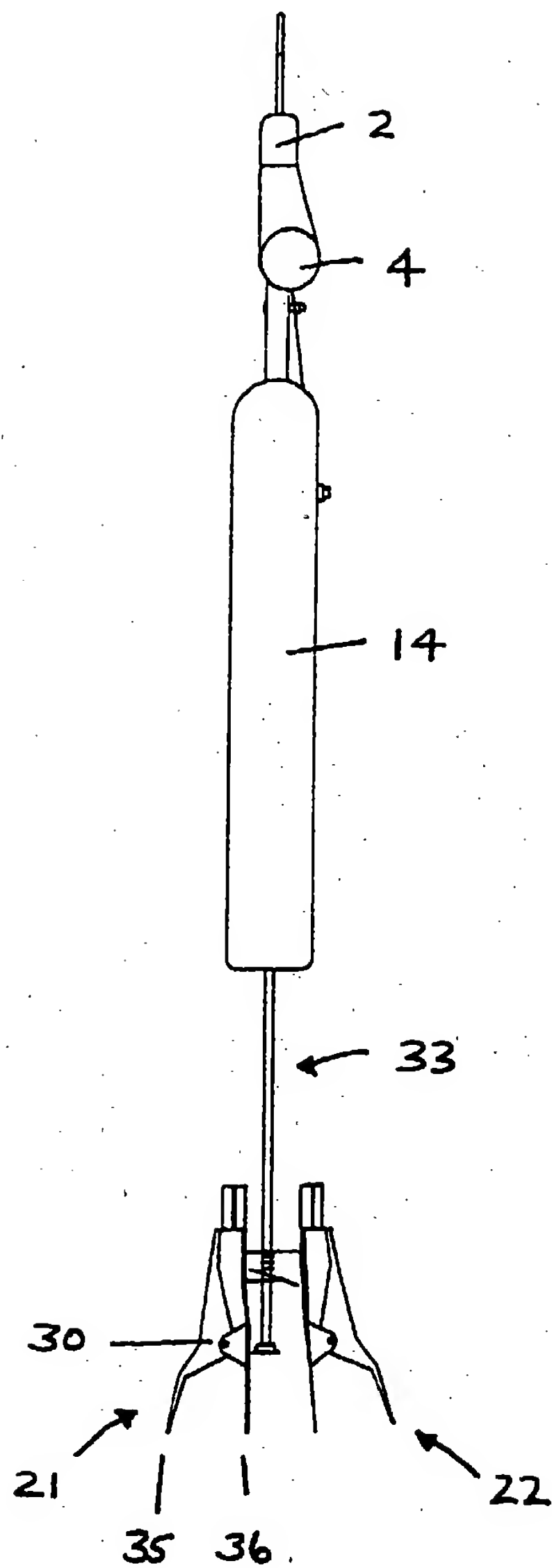
Fig 2

Fig. 3

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Fig 4

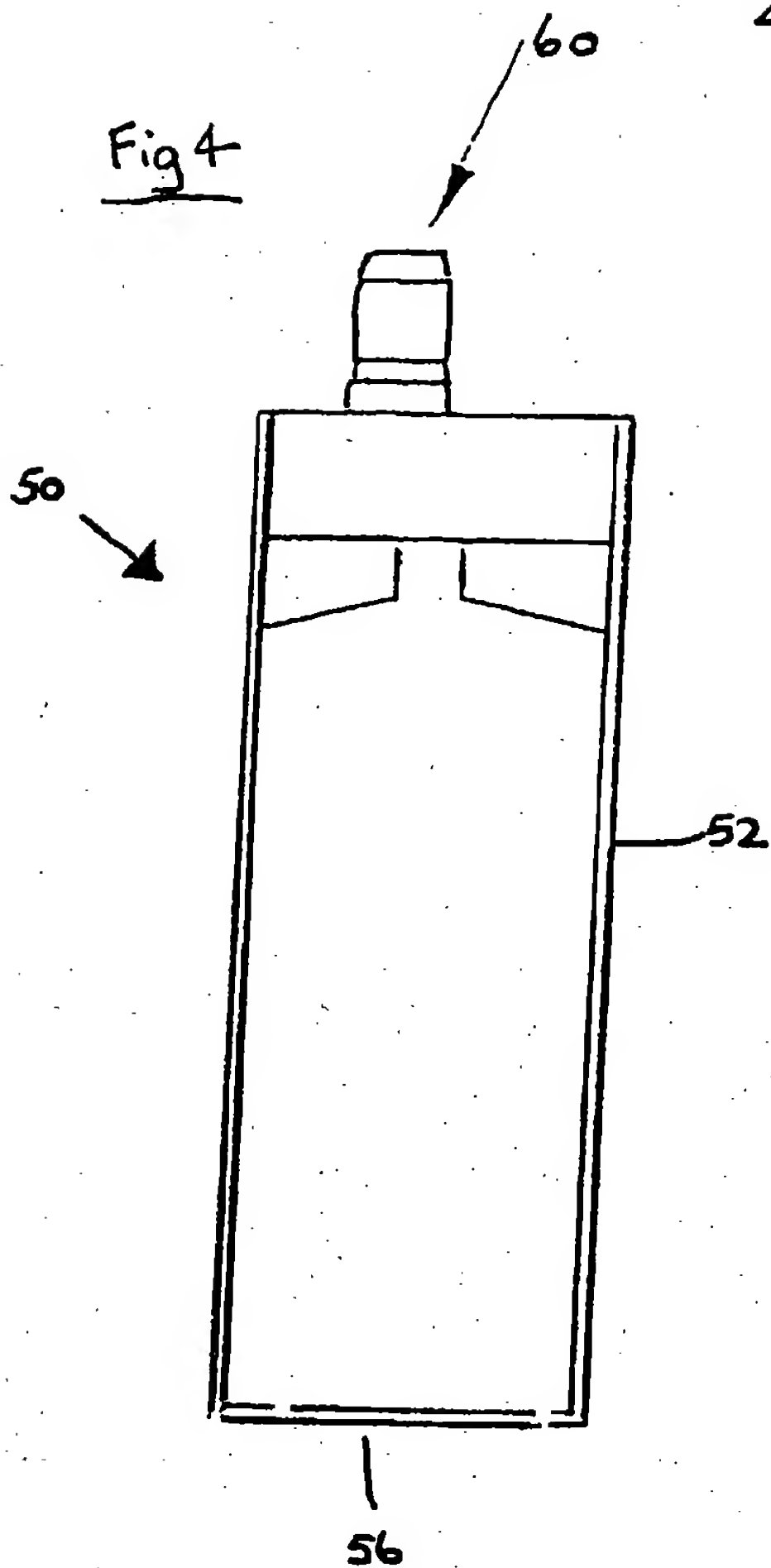


Fig 5

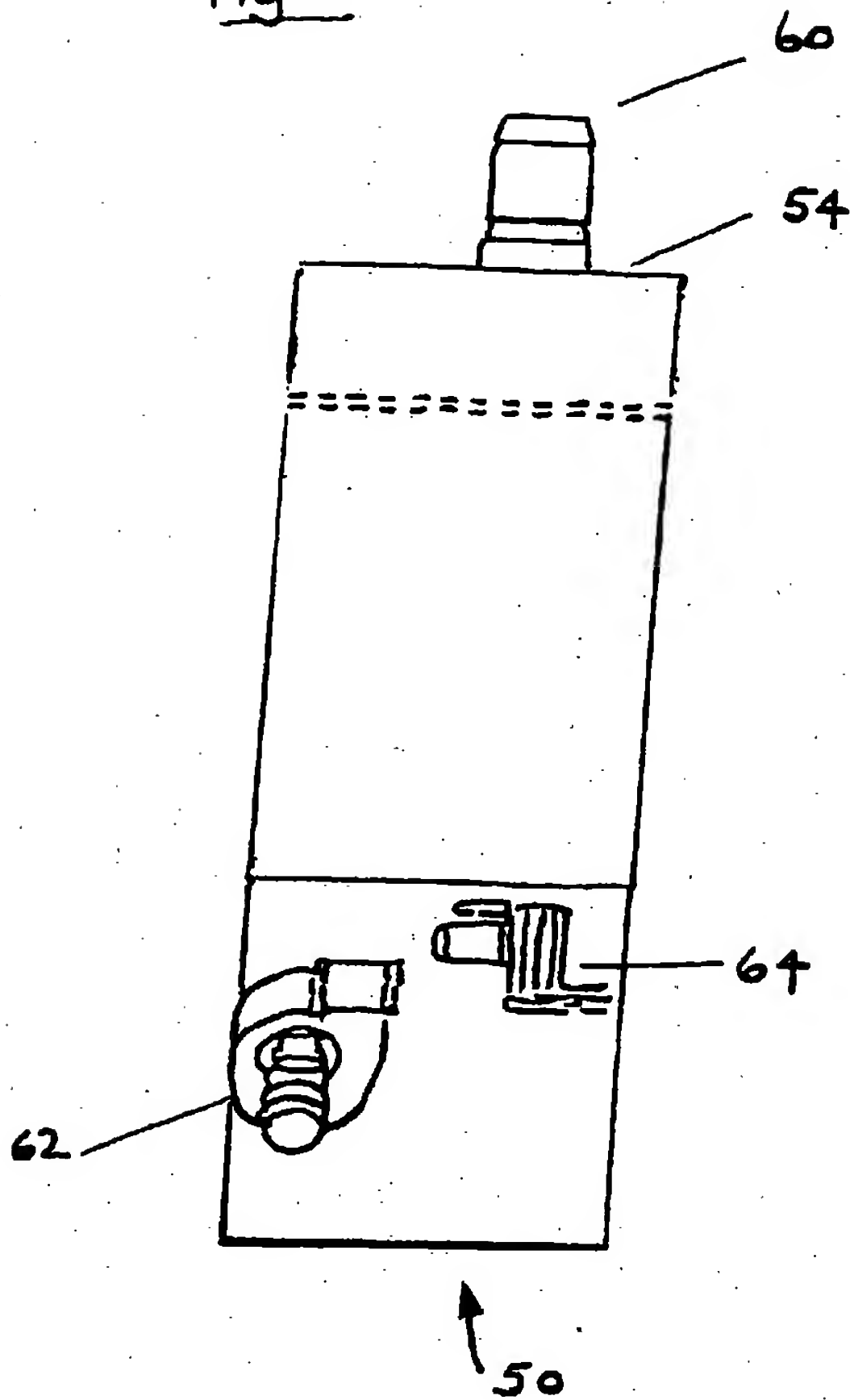


Fig 6

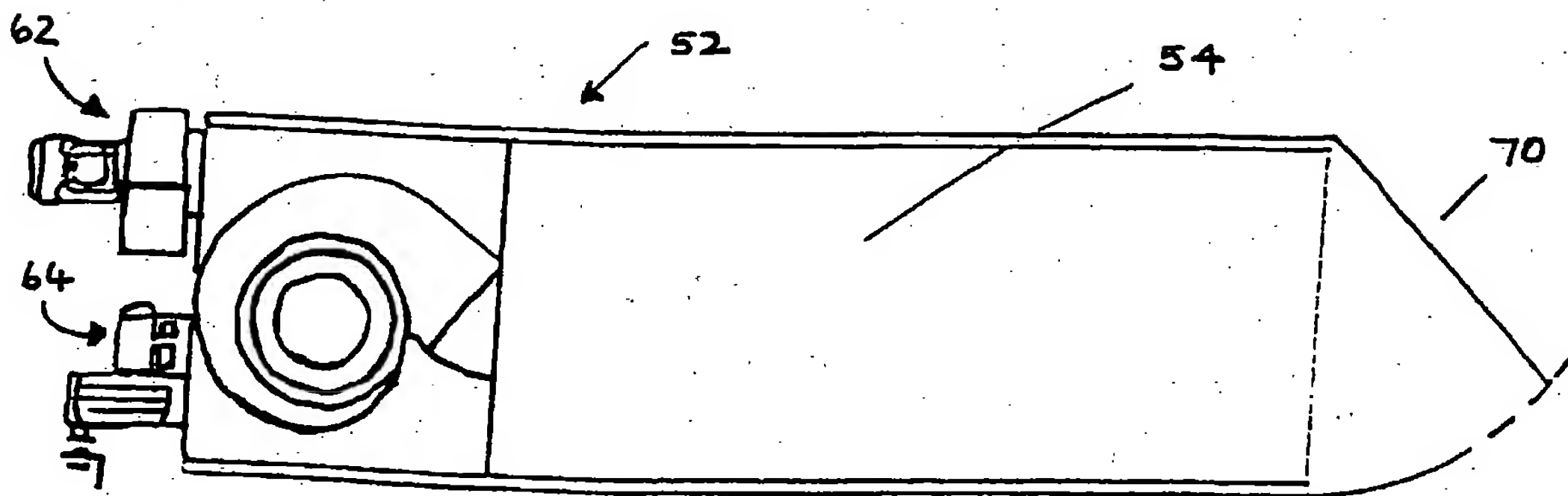


Fig 7

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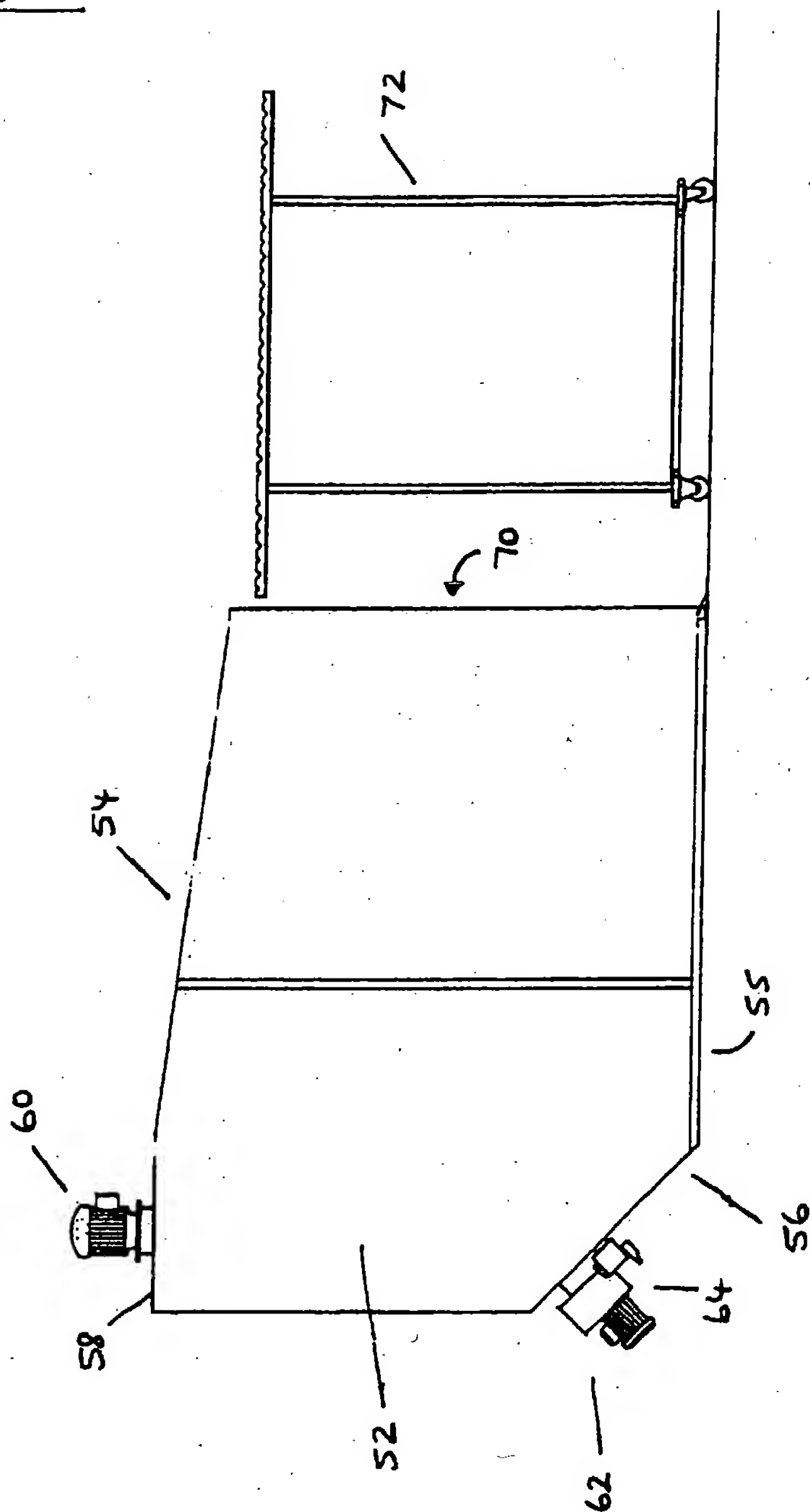


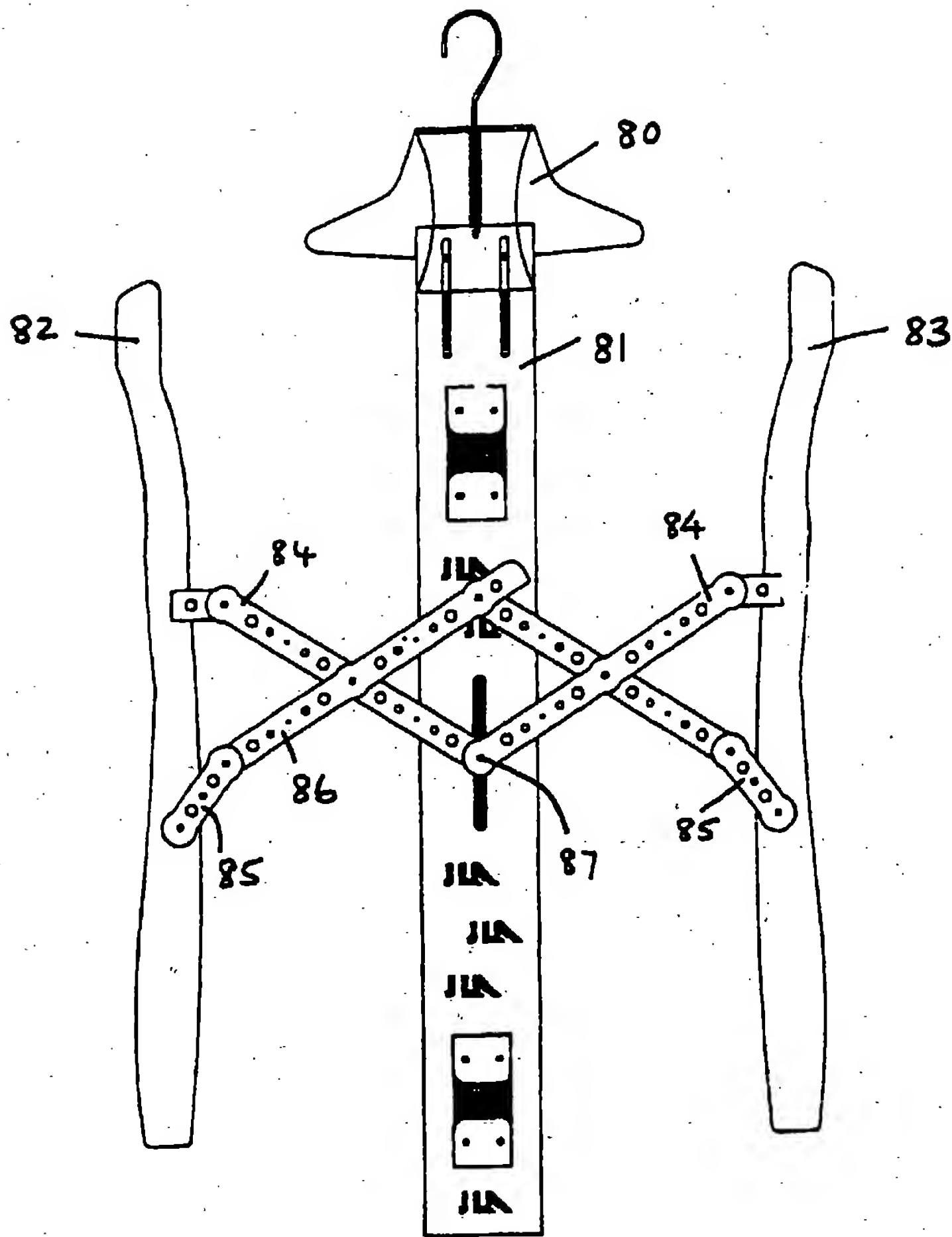
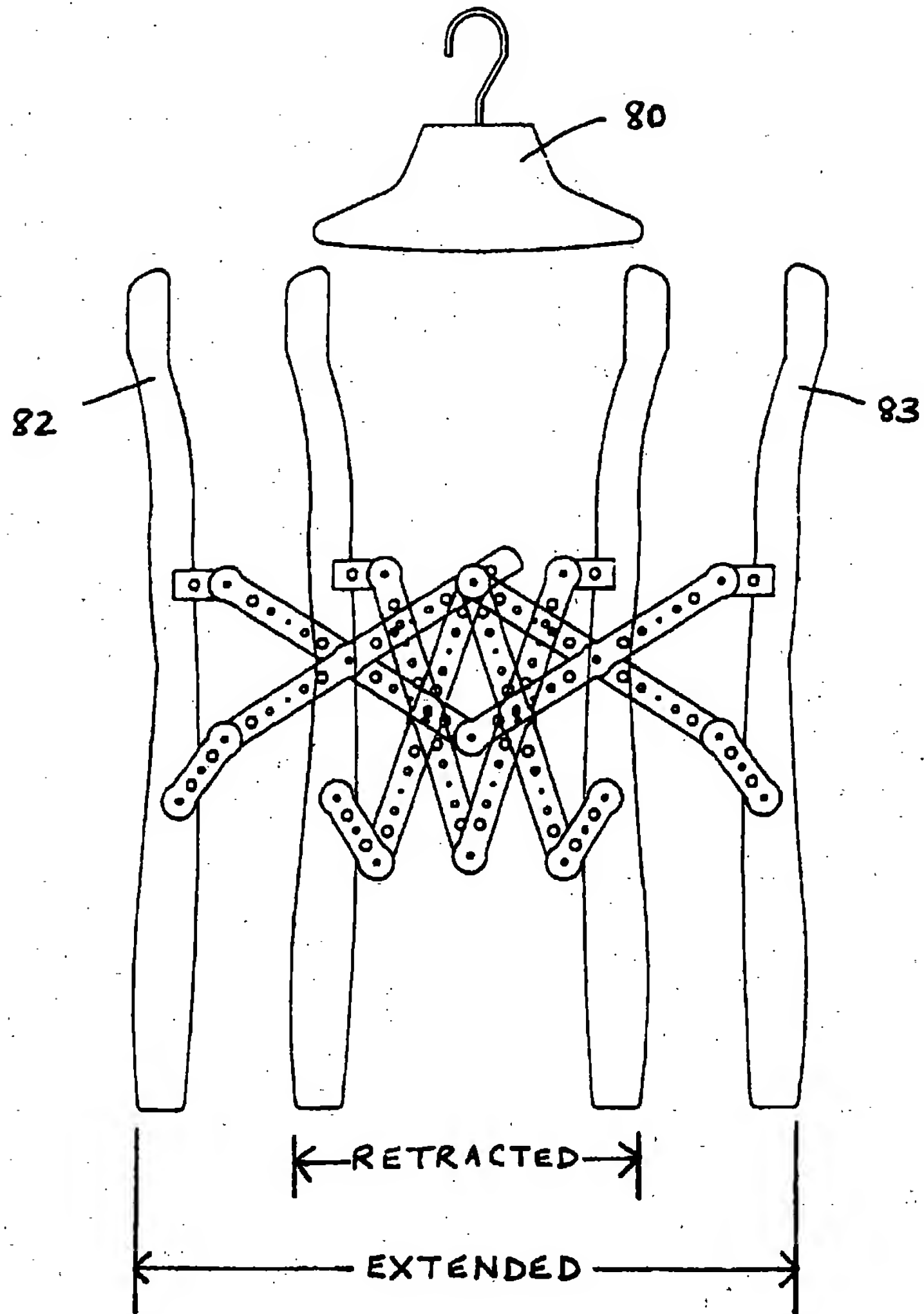
Fig 8

Fig 9

GARMENT DRYING METHOD AND APPARATUS

This invention relates to a method and apparatus for drying a garment, for example and in particular, after
5 the garment has been wet cleaned.

In the past, at a professional cleaners, garments are usually dry cleaned, as wet cleaning may result in the fabric being damaged or misshaped, particularly during
10 the drying process. Typically dry cleaning involves the use of solvents such as percoethylene, the use of which is tightly regulated. This results in the problem that expensive apparatus is required to comply with safety standards regarding the use of the
15 solvents.

As an alternative to dry cleaning, it is of course known to wet clean a garment, after which the garment may be dried eg by using a tumble drier. However if a
20 garment (which would normally be dry cleaned) is wet cleaned, problems often arise in the drying stage as the garment fabric may alter resulting in the garment being misshapen or shrunk. For this reason, the wet cleaning of "dry-clean-only" garments is typically not
25 thought to be appropriate.

In the case of wet cleaning, after drying the garment may undergo a finishing stage, part of which may involve reshaping the garment to rectify any fabric
30 relaxation which has occurred during the drying stage.

It is known to use a "tailors' dummy"-type mannequin as part of the finishing process. However such an item is not used while the garment is being dried.

5 The problem with this finishing stage is that it is time consuming, labour intensive and therefore expensive. In addition errors may be made in reshaping a garment because this reshaping is effected after shrinking or "relaxation" has occurred and when it is
10 difficult to judge what the original and proper shape of the garment should be. When this happens the garment may require washing and reshaping again.

The present invention aims to alleviate some or all of
15 the above problems, thereby improving the drying of garments and cutting down the "finishing" time substantially.

Accordingly in a first aspect, the present invention
20 provides apparatus for drying a garment, the apparatus including: a static dryer having a cabinet into which in use hot air and/or steam is feedable to accelerate the drying and/or finishing process, and forming means for holding and shaping the garment on which the
25 garment is arrangable to maintain the proper shape of the garment whilst it is being dried inside the cabinet.

By using the means for holding and shaping the garment,
30 garment shrinkage due to fabric relaxation during the

drying process is reduced or prevented and the duration of any finishing process required is reduced substantially.

5 Preferably the means for holding and shaping the garment includes either or both of the following: (a) support means for supporting the forming means in the drying cabinet; and/or (b) shaping means for shaping the garment, the shaping means being adjustable so as
10 to bias all or part of the garment into its normal shape. The garment may be an upper body garment eg a coat, jacket, shirt, blouse etc.

15 Preferably the shaping means includes any or all of the following:

(i) means for shaping a shoulder region of the garment;

(ii) means for shaping a body portion of the garment lying beneath a sleeve/arm hole;

20 (iii) means for maintaining the correct length of the garment;

(iv) means for shaping garment sleeves or cuffs; and/or

(v) at least one adjustable shoulder support for
25 biasing in use an upper sleeve region of the garment away from a shoulder region.

Such an apparatus may be adjusted to shape many different types and sizes of garments, especially
30 jackets and coats.

Preferably the support means includes a hook. By providing a hook the holding and shaping means can hang on e.g. a rail along with other garments in the drying cabinet, and/or before and/or after the drying process.

5

Preferably the means for shaping the shoulder region of the garment includes a yoke shaped so as to fully support the shoulder and neck region of the garment.

10

Preferably the means for shaping the portion of the garment lying beneath the sleeves/arm holes includes one or more body elements located below the means for shaping the shoulder region, each body element being movable in use so as to bear down against the body of the garment. The body shaping elements of the first aspect of the present invention are preferably biased to bear against the body of the garment. Preferably the apparatus includes locking means for fixing the body shaping elements in position.

20

Preferably the means for maintaining the length of the garment includes gripping means for gripping the garment, the gripping means being movable relative to the means for shaping the shoulder region. Preferably the gripping means includes at least one clamp for gripping a lower portion e.g. a lower hem of the garment.

25

30

In a preferred embodiment each adjustable shoulder support is substantially hemispherical in shape and is

mounted on the end of a member which extends from the means for shaping the shoulder region of the garment.

5 Preferably the dryer incorporates a fan to feed hot air and/or steam into the dryer to facilitate the drying and/or shaping of a garment during the drying process.

In a second aspect, the present invention provides a method of drying a garment which includes the steps of:
10 (i) fixing the garment in position so to maintain its proper shape, and (ii) drying the garment inside a drying cabinet into which in use hot air and/or steam is feedable to accelerate the drying and/or finishing process.

15 Preferably, the step of drying the garment in position includes arranging the garment on a means for holding and shaping the garment.

20 In addition the method preferably includes any or all of the following: (i) shaping the garment shoulder region; (ii) shaping the portion of the garment body lying beneath the arms; (iii) maintaining the garment length; and/or (iv) shaping the garment sleeves.

25 In addition the step of shaping the portion of the garment body lying beneath the arms may include adjusting one or more expanding side stretchers. Preferably the step of maintaining garment length
30 includes clamping a lower portion e.g. hem of the

garment in one or more bottom clamps and stretching the garment lengthwise.

In a third aspect, the present invention provides means
5 for holding and shaping a garment as described above.

An embodiment of the present invention will now be described by way of example with reference to the accompanying drawings in which:

10

Fig. 1 is a front view of an embodiment of a garment hanger according to an aspect of the present invention;
Fig. 2 is a front view of a garment hanger showing the approximate position of a garment arranged on the
15 hanger;

Fig. 3 is a side view of the garment hanger of Fig. 1;

Fig. 4 is a front view of a drying cabinet;

Fig. 5 is a rear view of the drying cabinet of Fig. 5;

Fig. 6 is a plan view of the dryer of Fig. 5;

20 Fig. 7 is a side view of the dryer of Fig. 5 and also includes a trolley for supporting garment hangers in the dryer;

Figure 8 is a front view of a second embodiment of a garment hanger according to the present invention;

25 Figure 9 is schematic view of the garment hanger of Figure 8 showing retraction and expansion of the hanger.

A practical embodiment of an apparatus for holding and
30 shaping a garment is illustrated in Fig. 1. The

apparatus 1 (generally called a garment hanger or former) comprises a yoke or upper shaping member 2 for shaping the shoulder region of the garment attached to which are adjustable shoulder supports 4 and 6. The adjustable shoulder supports are substantially hemispherical in shape and are mounted on the end of elongate members 8 and 10 which extend from opposite sides of the upper shaping member 2.

10 A frame member 12 extends from the base of the yoke 2 and attached to this, at approximately its midpoint, is a pair expanding side stretchers 14 and 16, one being mounted on either side of the frame 12.

15 The side stretcher 14 is linked to the frame 12 by a pair of arms 18 and 20 and, likewise side stretcher 16 is linked by arms 22 and 24. The upper arms 18 and 22 are each pivotally linked at one end to the upper end of a respective side stretcher 26 and 28 and, at their other end, to the frame at point B. The lower arms 20 and 24 of each pair are pivotally linked at one end to a respective stretcher and at the other to a fixed bracket 30 on the frame 12 such that each lies just below and substantially parallel to its respective upper arm.

Attached to each of the upper arms is an end of a respective spring 32 and 34, the other end of which is attached to the frame. Approximately one third along the length of each of the upper arms, from where they

are attached to the frame, a second pair of short arms 15 and 16 is pivotally attached. The other end of each of these short arms is attached to a pivot pin 17 which is restricted to move in one direction along the frame by a second bracket 18 attached to the frame.

The arms are arranged such that when the side stretchers 4 and 5 are extended fully in a first position away from the frame, the arms 18, 20, 22, 24 lie approximately horizontally and when the side stretchers are pulled in to a second position to lie close to the frame the arms lie in a more upright position, as shown in Fig. 1. The biasing means (springs 32, 34) bias the arms to the first position, which in use stretches the sides of the garment on the hanger.

The pivot pin 17 is also attached to a bracket 19 which can move along the frame and this bracket 19 can be fixed in position via a locking nut 20. To extend the

side stretchers is very simple: the locking nut is removed and the action of the spring forces the side stretchers to extend.

25

At the base of the frame are a pair of clamps 21 and 22, which are used to clamp e.g. the hem of a garment and which can be moved along the frame by means of an adjustable stretcher 23. At the top of the former is a hanging hook 24 supporting the apparatus.

30

Figure 2 shows how a garment 30 would be arranged on the former of Fig. 1.

Fig. 3 is a side view of the garment hanger of Fig. 1, showing more clearly the position and construction of the bottom clamps 21 and 22 in the closed position. Each clamp comprises two elements 35 and 36 which are linked pivotally about a pivot pin 30 located approximately midway along the elements' lengths. In the closed position as shown, the upper end of the elements on one side of the pivot pin are closed together, and the bottom elements on the other side of the pivot pin are separate. To open the clamps the lower ends are pushed together, thereby causing the upper ends to pivot about the pivot pin in opposite directions and effecting separation of the upper ends.

In use, the clamp 21,22 may be moved along a stem 33 to adjust the position of the clamps relative to the yoke 2, thereby maintaining the length of a garment on the hanger.

Figs. 4-7 show one embodiment of a dryer 50. Fig. 7 shows a side view of the dryer, which comprises a cabinet 52 with a door 70. On the flat section 58 of the roof 54 a main fan 60 is mounted and on the angled section 56 of the base 55 an extraction fan 62 and gas burner 64 are mounted. Fig. 7 also shows a trolley 72 on which one or more garment hangers may be supported when inside the dryer.

In use, garments are loaded on to a number of respective garment hangers which are then loaded on to a trolley 72. The trolley 72 is wheeled into the dryer 50 and the door 70 of the dryer 50 is closed. The gas burner 64 provides heat to the dryer 50 and steam is supplied into the dryer via the main fan 60. The steam is then extracted from the dryer using the extraction fan 62. Supplying steam via the fan 60 ensures that the steam is introduced into the dryer cabinet without being directed straight onto the garments.

Figs. 5 and 6 are a back view and a top view respectively of the dryer which show more clearly the position of the main fan 60 the extraction fan 62 and the gas burner 64 on the cabinet from different views.

Figure 8 shows a garment hanger according to a second embodiment of the present invention. The hanger includes a small yoke or upper shaping member 80 mounted at the upper end of a frame 81. The side stretches 82, 83 are each mounted on a pair of arms 84, 85. Each arm 85 is pivotally connected to a respective third arm 86 and each pair of arms 84, 86 are pivotally connected together in the region of their mid-points.

The end of each arm 86 not connected to the arms 85 is pivotally mounted on the frame 81. The end of each arm 84 which is not connected to the side members 82, 83 is slidably and pivotally mounted to the frame 81 thereat

point 87. The ends of arms 84 connected to the frame 81 may slide up and down the frame, thereby allowing side stretches 82,83 to move in and out with respect to each other and the frame 81.

5

The attachment at point 87 may be biased such that the side stretches 82,83 are biased to their retracted position. Furthermore, there may be some form of locking means, e.g. a locking nut at point 87 (or
10 elsewhere) to fix side stretches 82,83 in a desired position e.g. fully or partially extended.

Figure 9 schematically shows how arms 84, 85 and 86 operate in order to permit the side stretches 82,83 to
15 retract and extend.

The above embodiments of the present invention have been described by way of example only and various alternative features or modifications from what has
20 been specifically described and illustrated can be made within the scope of the invention, as will be readily apparent to persons skilled in the art.

CLAIMS:

1. Apparatus for drying a garment, the apparatus
5 including: a static dryer having a cabinet into which
in use hot air and/or steam is feedable to accelerate
the drying and/or finishing process, and forming means
for holding and shaping the garment on which the
garment is arrangable to maintain the proper shape of
10 the garment whilst it is being dried inside the
cabinet.
2. Apparatus according to claim 1 wherein the means
for holding and shaping the garment includes support
15 means for supporting the forming means in the drying
cabinet.
3. Apparatus according to claim 1 or claim 2 wherein
the means for holding and shaping the garment includes
20 shaping means for shaping the garment, the shaping
means being adjustable so as to bias all or part of the
garment into its normal shape.
4. Apparatus according to claim 3, wherein the
25 shaping means includes any or all of the following:
 - (i) means for shaping a shoulder region of the
garment;
 - (ii) means for shaping a body portion of the
garment lying beneath a sleeve/arm hole;
 - 30 (iii) means for maintaining the correct length of

the garment;

(iv) means for shaping garment sleeves or cuffs;
and/or

(v) at least one adjustable shoulder support for
5 biasing in use an upper sleeve region of the garment
away from a shoulder region.

5. Apparatus according to claim 2 wherein the support
10 means includes a hook.

6. Apparatus according to claim 4 wherein the means
for shaping the shoulder region of the garment includes
a yoke shaped so as to fully support the shoulder and
15 neck region of the garment.

7. Apparatus according to claim 4 wherein
the means for shaping the portion of the garment lying
beneath the sleeves/arm holes includes one or more body
20 elements located below the means for shaping the
shoulder region, each body element being movable in use
so as to bear down against the body of the garment.

8. Apparatus according to claim 7 wherein the body
25 shaping elements are biased to bear in use against the
body of the garment.

9. Apparatus according to claim 7 or claim 8 wherein
the apparatus includes locking means for fixing the
30 body shaping elements in position.

10. Apparatus according to claim 4 wherein the means
for maintaining the length of the garment includes
gripping means for gripping the garment, the gripping
means being movable relative to the means for shaping
5 the shoulder region.

11. Apparatus according to claim 10 wherein the
gripping means includes at least one clamp for gripping
a lower portion of the garment.

10

12. Apparatus according to claim 4 wherein each
adjustable shoulder support is substantially
hemispherical in shape and is mounted on the end of a
member which extends from the means for shaping the
15 shoulder region of the garment.

13. A method of drying a garment which includes the
steps of:

(i) fixing the garment in position so to maintain its
20 proper shape, and (ii) drying the garment inside a
drying cabinet into which in use hot air and/or steam
is feedable to accelerate the drying and/or finishing
process.

25 14. A method according to claim 13 wherein, the step
of drying the garment in position includes arranging
the garment on a means for holding and shaping the
garment.

30 15. A method according to claim 13 or claim 14

including any or all of the following: (i) shaping the garment shoulder region; (ii) shaping the portion of the garment body lying beneath the arms; (iii) maintaining the garment length; and/or (iv) shaping the garment sleeves.

16. A method according to claim 15 wherein in addition the step of shaping the portion of the garment body lying beneath the arms includes adjusting one or more expanding side stretchers.

17. A method according to claim 15 wherein the step of maintaining garment length includes clamping a lower portion of the garment in one or more bottom clamps and stretching the garment lengthwise.

18. Means for holding and shaping a garment as included in any one of claims 1-13.

19. Apparatus for drying a garment substantially as any one embodiment herein described with reference to the accompanying drawings.

20. A method of drying a garment substantially as any one embodiment herein described with reference to the accompanying drawings.



Application No: GB 9802846.7
Claims searched: 1-20

Examiner: Steve Waller
Date of search: 30 April 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): F4G GECB

Int Cl (Ed.6): F26B 9/06; D06F 58/10, 59/02

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 1 414 041 (Parlour) See page 3 line 124 to page 5 line 32	1-5, 7, 8, 9, 13-16,18
X	GB 1 263 951 (Unipress) See figures 1, 3 and 8	1,2,3, 13,14,18
X	GB 1 236 908 (Witzke) See page 5 line 108 to page 6 line 11, page 3 lines 71 to 78	1-4,5,6,7, 9,10, 13-15,18
X	GB 0 409 114 (Johnston) See page 2 line 19 to page 3 line 106	1-11, 13-18

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